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ABSTRACT

The field of education serves as the basis for this discussion on the use of categories in a thesaurus for information processing and documentation purposes. The author briefly shows how a number of writers concerned with the structure of the field of education, as well as makers of classification schemes, have commented on the value of setting up a system of categories of terms in order to define and make clear their notion of the structure of the field. Included in the discussion are the "Barhydt/Schmidt Thesaurus," the "International Bureau of Education Thesaurus," S. R. Ranganathan's facet analysis, and London Education Classification, and the "EUDISED Thesaurus." (Author/SJ)

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EUDISED PROJECT

A STUDY OF THE ROLE OF CATEGORIES IN A THESAURUS FOR EDUCATIONAL DOCUMENTATION

by

D.J. FOSKETT, M.A., F.L.A.
University of London Institute of Education

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The role of Categories in the operations of thinking has exercised the minds of philosophers since the time of Aristotle. They were regarded for centuries as the basic approach to discussion of the forms of knowledge, but with the rise of modern science and a decline in the influence of Aristotle, the role of categories fell into some disrepute. During recent years, however, there has been a marked revival of interest; philosophers and scientists have agreed that arranging concepts in categories can help in understanding them and so acts as an aid to learning. The rise of the school of General Systems Theory, originated by Ludwig von Bertalanffy (1, 2) has also drawn attention to the necessity for considering the universe of knowledge as one indivisable whole, and its adherents are opposed to the fragmentation of knowledge into different specialisations or 'Disciplines', each of which is studied and advanced more or less in isolation from the others. The field of Education is a particularly fruitful one for this kind of analysis, since it is of a dual nature; on the one hand, there is a recognisable field of study in itself, the study of Education, or Pedagogy, while on the other hand there is the fact that Education may be held to be concerned with all aspects of knowledge, since it is involved with the theory of knowledge, the psychology of learning and the sociological aspects of knowledge, in addition to the subjects of the curriculum. In principle, any subject may be taught, and thus Education reaches into all corners of the universe of knowledge as a particular kind of activity.

A good deal of modern work in the field of Education has been concerned not so much with pedagogy, or the teaching of subjects, as with those aspects of education which are now generally called Foundations, and it is worth pointing out to begin with that there have been several exercises in the search for categories in these Foundations : Philosophy, Psychology, and Sociology. These efforts may be exemplified by the work of P.H. Hurst and Basil Bernstein in the United Kingdom, and J.P. Guilford and B.S. Bloom in the United States. A brief review of the work of these will help to clarify the situation in respect of educational documentation also, since one of the features of a classification scheme or thesaurus for documentation should be that its structure makes sense to those who are experts in the field itself. This does not mean, of course, that a classification scheme should set out to be an arbiter or decision maker in the subject field with which it deals; on the contrary, as will be argued in detail later, it should not attempt to portray any bias to one or the other side in any particular controversy. It should not even be concerned with decisions on truth or falsity; for example, we have no sure knowledge at this stage whether or not such things as 'Flying Saucers' actually exist, but in a classification scheme it would be necessary to include such a term, since it has been the subject of many documents.

Analysis of Foundations

Philosophy

Since the classification of knowledge is itself considered to be a philosophical activity, let us take first the area of "Philosophy of Education"; here the "forms of knowledge" approach by P.H. Hirst (3, 4) has some practical relevance for educational documentation, though it is more closely related to the subjects of the curriculum. In his articles "Liberal education and the nature of knowledge" and "Educational Theory", Hirst claims that there are several "forms of knowledge" which are distinct from one another, and which can be identified by their relation to four main factors :

1. there are certain concepts which are central and peculiar to the form;
2. there is a network of types of relationship peculiar to the form, giving a distinctive logical structure;
3. statements made in discourse on a form are testable against experience, and each form has its own distinct mode of experience;
4. each form has its own characteristic techniques and skills of research and discovery.

These forms may be further classified, according to their content, into distinct domains: mathematics, sciences, history, morals, aesthetics, philosophy, religion. Knowledge may also be organised in "artificial units", called "fields of knowledge", which may draw on more than one form for their content: Hirst gives as examples "the neighbourhood", "power", "the modern European mind". Finally, knowledge may also be grouped into "practical theories", in which information is collected from different forms and fields and organised for practical activity: medicine, engineering, education. Hirst regards a liberal education as embracing the initiation of the pupil into at least a basic knowledge of all of these different forms, so that even when he later becomes a specialist, he will have an understanding of the other forms and be a more all-round educated person. This approach certainly has great interest for students of documentary classification, but perhaps in this context its significance would mainly be as a basis for organising the subjects of the curriculum, since the structured parts of the thesaurus will require a classifactory sequence for those terms.

Sociology

A sociological approach to the categorisation of educational knowledge is that of Basil Bernstein whose article "Classification and framing of educational knowledge" has been published in The Human Context and in Knowledge and Control edited by M.F.D. Young (5). Bernstein relates the classification of knowledge to the curriculum of the secondary school, and divides these curricula into two major types: collection and integrated. A collection type of curriculum is one in which a group of subjects is taught by a group of separate teachers, each one teaching his own subject; an integrated curriculum is one which is taught more in a team fashion, with less dependence on the subject authority of the individual teacher. Each of these two types may then be further sub-divided according to whether it has strong or weak framing, that is whether the boundaries between one subject and another are sharply delineated or not. This scheme relates to the organisation of a curriculum which, whether consciously or not, educates children to believe that knowledge has of necessity to be structured in a particular way, and this repeats the philosophy of the teacher. Bernstein goes on to relate his typology to methods of social control and suggests that "the less rigid social structure of the integrated code makes it a potential code for egalitarian education" - probably more suited to the likely needs of the 21st century. This would entail a move away from the notion of "subject discipline" in water-tight compartments, and from over much reliance on the authority of the individual teacher. Learning in this situation would not be the old fashioned idea of memorising masses of facts that can be reproduced in an examination. It implies the importance of a more neutral mode of access to knowledge, in which individual children are shown how to find out for themselves, and given an insight into the various modes of approaching knowledge so that they may have a wider range of choice in their structuring of their own concepts. One implication of this would necessarily be a far greater reliance on stores of information, organised in a neutral way. This does not mean the abandonment of categories for the spurious simplicity of an alphabetical arrangement of terms, which is certainly neutral, in a documentation system; on the contrary, it is necessary to have a structure of categories in order to have a logical and consistent, as well as neutral, organisation. But it also implies that the child or researcher looking for information must be able to approach it through a variety of channels; it means therefore that there must be an abundance of cross referencing between categories, and that there should, if possible, be no bias visible on the part of the compiler of the thesaurus.

Psychology

The need for categories is strongly emphasised from the psychological standpoint in B.S. Bloom's Taxonomy of Educational Objectives(6). There are proposed three elements of Bloom's Taxonomy:

- Cognitive Domain
- Affective Domain
- Manipulative/Motor Skill Domain

Only the first two have so far been published, and the proposal is that the third shall wait until there has been a gathering of practical experience. Four factors should be taken into account in compiling

the taxonomy :

It should cover the ground as required by its users;
It should show a logical and consistent development ;
Its terms should be precise, and reflect the state of the art;
It should be neutral in choice of terms and their arrangement.

Right from the beginning, Bloom emphasises the need for categories : "The provision of major categories as well as sub-categories in the taxonomy enables the user of the taxonomy to select the level of classification which does least violence to the statement of the objective. Further the hierarchical character of the taxonomy enables the user to more clearly unables the user to more clearly understand the place of a particular objective in relation to other objectives".

There is a kind of logical development in his system of categories :

Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Nevertheless a good deal of vagueness appears in the actual carrying out of the analysis. "Knowledge" in this context is not well defined, and the details show cross classification and ambiguities. It is difficult to apply consistently, and one can easily find different placings for the examples given, which is a fatal defect in a classification suitable for documentation.

The second volume of Bloom's Taxonomy, the Affective Domain, was published in 1964. It contains a useful account of the purpose of the "classification" - mainly for arranging Tests - and an explanation of the relation between the two domains. This part is very much influenced by behaviourist psychology, although the authors claim that " 'Neutrality' in this instance means that the taxonomic scheme should be broad enough to include objectives from any philosophic orientation, and thus from any culture".

The categories are "hierarchical in order, arranged along a continuum of internalization from lowest to highest", as follows :

1. Receiving (attending)
2. Responding
3. Valuing
4. Organization
5. Characterization by a value or value complex.

The subjectivity of the whole approach, and its unsuitability for thesaurus-type use in retrieval is shown by the very mixed collection of subjects classified as examples into each category. Thus "2.2. Willingness to respond" includes these :

Practices the rules of good health, particularly with reference to rest, food and sanitation

Responds with consistent, active and deep interest to intellectual stimuli

Co-operates in the production of a room or school newspaper or magazine

Performs simple experiments ralting to biological or physical science.

It seems clear that anyone searching a documentation system for information on these topics would not expect to find them all in the same category.

Perhaps the most highly systematic use of categories in a psychological approach to the problem of knowing is that of J.P. Guilford, with his "Structure of Intellect" model (7). Guilford has a three dimensional model which he claims is "morphological not hierarchical"; it is based on the three major categories of Contents, Operations, Products. This three dimensional model gives cross classification by the intersection of individual sub-divisions within each of the three main categories, resulting in 120 cubes or cells which identify aspects of ability.

The main category of Mental Operation has 24 sub-divisions, of which the major headings are cognition, memory, divergent production, convergent production and evaluation.

The main category of Content has 30 divisions which are areas of information and here the major headings are figural (that is pertaining to information in concrete forms), symbolic (denotated signs which refer to information), semantic (conceptions of mental constructs), behavioural (information involved in human interaction).

The main category of Products has 20 sub-divisions describing formal classes of information, for example units, classes, relations (connections between items and information) systems, transformations (changes of various kinds of information), implications (connections between items of information arising out of the context).

Guilford also has a notation which he calls the S I code system; in it letters are used to stand for each of the fifteen categories. All are the initial letter of the category itself, with the exception of convergent production which is denoted by the letter N.

An interesting feature of this particular system is that it has formed the basis for the Relational Analysis System of J.E. Farradane for the analysis of scientific literature, and as will be seen later, it bears some considerable resemblance to the scheme of facet analysis devised by S. R. Ranganathan.

A rather more specialised example of the application of a set of categories to a classification system is the International Standard Classification of Education (ISCED) (8). This inter-departmental project of Unesco, administered by the Office of Statistics, is designed primarily to build up a data bank of statistics relating to the educational systems of various countries; it is not a system for the documentation of educational discussions. Most of the categories are confined to the major area of levels of education, and it would naturally be desirable to incorporate this kind of classification into any other documentation system, even though it would only cover a small part of that system. The categories are as follows:

0	Education preceding the first level
1	Education at the first level
2	Education at the second level: first stage
3	Education at the second level: second stage
5	Education at the third level: first stage, of the type that leads to an award not equivalent to a first university degree
6	Education at the third level: first stage, of the type that leads to a first university degree or equivalent
7	Education at the third level: second stage, of the type that leads to a post-graduate university degree or equivalent
9	Education not definable by level
X	No education

"The final position 'No education' is required only when collecting statistics of the 'stock' of educated people from an enumeration of the population of an area as in a population census. It is not needed for statistics of current educational operations". The use of this classification to define educational levels would have great advantages for the EUDISED Project. Further sub-division

at each level can be achieved by what are called "Fields". These can be used consistently, from levels 2 to 7, but some fields do not occur at all of these levels. Apart from "general education", "teacher training", "special education for the handicapped", "other education", all of these fields are curriculum subjects; each of them can be further broken down into sets of programmes, but again these are related to the curriculum. It is interesting to see that in this classification there is a specific use of post-co-ordination to obtain sharper focus of the subject of any particular set of statistics.

Documentary Analysis and Classification

Here it must be emphasised that this study is concerned with documentation, not with the philosophical analysis of concepts. The latter may take many and varied forms, as shown by the proposals of Hirst and the others. Bernstein in particular has shown the effect of this kind of analysis on the structure of the curriculum. A major difference between such analysis and documentary classification is that, in philosophical analysis, every specialist tends to regard the whole of knowledge as centering on his own interests at least, and very often on his own personality as well. It is often very difficult for these specialists to understand that there is possible an objective survey of the whole of knowledge for the purposes of documentary classification.

These are approaches to the question of the nature of knowledge and the learning processes. Here we are not attempting to "do philosophy", but to represent what is actually written in documents about Education. In other words we are attempting to take a general, objective position; this is naturally difficult, and indeed is only possible because we are faced with the problem of organising knowledge that has been crystallised and fixed in words which are printed or inscribed on some permanent record. We are, in fact, organising words or terms and not propositions or opinions about the subject. It is true that terms used by writers are in fact symbols of their concept of reality, and if we are trying to form a structure of words which will be helpful to users of documentation, this structure ought to correspond as closely as possible to the actual structure of reality "out there", which these writers are purporting to describe. We are not, however, concerned with the rightness or wrongness of different approaches to knowledge, only with the use of words to describe that knowledge; we are concerned with the fact that documents are written about such subjects as flying saucers, and these must therefore find a place in any information retrieval system, whether they exist in fact or not, since users of the system are liable to be searching for documents about them.

Most controversy in the discussion of Education tends to circle round relationships rather than definitions of elementary terms. For example, in discussing such matters as "How should girls be educated?", controversy does not circle round the question "What are girls?". We can therefore list "Girls" as a neutral element or term in an educational documentation system because this term denotes a concept which is written about, without indicating what sort of controversy is involved nor what sort of attitudes should be adopted. Even where there is obvious scope for confusion, as in the term "Public School", in a documentation system one can, and indeed must, identify the concept with a definition or a scope note.

The scope of categories

Before turning to the nature of categories for the Education Thesaurus, it is necessary to consider whether categories are necessary at all in this kind of authority list. The original purpose of Roget in the construction of his "Thesaurus of English words and phrases", was to arrange terms in groups which demonstrated the relationships between terms, concepts, and meanings; to this list of words and phrases arranged in groups, there was appended an alphabetical index in which were listed all the contexts in which a given term would appear.

This is a different construction from most modern thesauri, which originated in the United States, where the alphabetical subject catalogue, or dictionary catalogue, is strongly entrenched. The original introduction of the word "thesaurus" into documentation was by H.P. Luhn (9), who expressed the view that terms should be arranged in what he called "notional families" and indexed with an alphabetical key: "This is similar to the work required for the creation of

Roget's Thesaurus that basic organisation of his work may well serve as the skeleton for this process". This view was quickly lost to sight, however, and most of the early thesauri in the United States consisted mainly of the alphabetical list of terms, occasionally with a partly classified array as well. Sometimes, as in Medical Subject Headings (MESH) these were not called "Thesaurus", but "List of Subject Headings", as was the usual practice in the United States before Luhn's suggestion. The notion of classification was kept separate and regarded as something distinct, but "classifications" in the European sense has always been taken to mean a display of terms in relationship; traditional classifications were made up of single hierarchies based solely on the generic relation, in imitation of the taxonomies in the classifacatory sciences. It was the achievement of Melvil Dewey to link this sort of analysis with a decimal fraction notation, in which each sub-division of a genus was represented by an additional figure to the right of the decimal point. In this way, the notation was expressive of the structure of the terms. The main drawback to this was that subjects were treated as if they were objects, and compound subjects were fitted into the schedules whether or not they could be regarded as species of their immediate superior terms. The introduction of facet analysis by S.R. Ranganathan (10) brought back into traditional classification the notion of sets of elementary terms which were kept separate from one another, both conceptually and in notation, and which could be combined together, or synthesised, at the time of classifying any particular document to form a compound subject. That is, the schedules of a faceted classification contain a measure of pre-co-ordination, in that genuine hierarchies (genus-species) are included within facets, but the schedules are used post-co-ordinately for analysis and synthesis of subjects as documents are classified and indexed. In other words compound subjects are not included in the schedules in the way in which they are fixed in other traditional classifications in a rigidly pre-co-ordinated list.

In recent years the idea of grouping of terms has been brought back into modern thesauri. For example, the first draft of the ERIC thesaurus had no groups of terms, but was merely an alphabetical array; now there are fifty-two Descriptor Groups, though these groups have more or less arbitrary names and are arranged in alphabetical order of those names. It has been realised that the display of several types of relations, and not merely the generic relation, has an intellectual value beyond that of helping the indexer to analyse the document. This is, and this may well be more important still, that the structure itself has an "ordering" function, by directing the thinking of the searcher along the neutral lines of the thesaurus. It helps the searcher to clarify his own thinking and to formulate his enquiry in a way which corresponds as closely as possible to the analysis that has been made of the documents in the store at the input stage. In this way, it is hoped to increase the performance of the retrieval system by allowing an identification of relevance, in terms of a document's relation to a subject field, and of greater pertinence, in terms of the value that any given document has to a particular enquiry.

A number of proposals have already been made for the identification of systems of categories, in the field of Education as well as in general. The study made some years ago for Unesco by Eric de Grolier (11) shows that in classification schemes the grouping of terms into categories has been made, either implicitly or explicitly, since the first edition of the Dewey Decimal Classification. In the first place, this was probably intuitive, although Dewey himself identified at least two categories corresponding to geographical and chronological sub-division; in fact he combined these into one class 900, since he did not distinguish between chronological division and historical division in terms of countries. Over the years, the UDC has steadily extended its use of categorisation; beginning with a few analytical tables which could be introduced at specified subjects in the schedules, it has extended the notion of synthesis over more and more areas of the schedules themselves. By reducing the number of compound "subjects", and by enumerating "elementary" terms as far as possible, with rules for combining them to form compound strings for specific documents, a classification scheme can provide much greater hospitality for indexing subjects, even in a rapidly developing field.

If we now apply the criteria of neutrality, consistency, and logical development to the examination of existing thesauri, we can test the notion of the logic of the subject, and see whether these lists do in fact succeed in providing a neutral logical structure.

Many terms in the descriptor group display seem out of place. Many compound terms are listed which could be very easily separated into their constituent elements. No relations are shown between the descriptor group, and, as Tell's paper implies, there is continuous separation of closely related terms, e.g., Curriculum and Arts, Humanities, Social Sciences; there is no special science but Biology, there are Physical Sciences but not Natural Sciences. Psychology is separate from Behaviour and Attitudes. The group of terms in Attitudes well exemplifies the haphazard approach. Family and Parent are included, Mother but not Father, Scientific but not Artistic. One is at a loss to account for the curious selection and arrangement of terms in this thesaurus.

The Barhydt/Schmidt Thesaurus

This is a good example of a structured Thesaurus (14) well set out and with an excellent introduction. It has a logical structure of seventeen facets, each with several sub-facets. Part 1 contains the Alphabetical Array, Part 2 the Faceted Array, Part 3 a Permuted List. Scope notes are liberal, sometimes showing an inclusion relation, e.g. "Broadcast Programming SN Television and Radio Programming" (but there is no reference from "Programming SN the Process of Constructing Programmed Materials").

Some extracts from their Guidelines for Thesaurus Use are worth recording:
"It is absolutely necessary that an indexer or searcher negotiate each and every descriptor" ... "it is absolutely imperative that the user browse through the sub-facet of each descriptor. The faceted display and the alphabetical thesaural display are functionally inter-dependent".

Some facets are more abstract than others e.g., 7 Affect, 9 Sensation, 10 Mental Construct; these illustrate very well the difficulty of coping with marginal fields in an Education Thesaurus. The sub-facets show some logical structure but alphabetical arrangement is often used where another criterion readily suggests itself. The main criticism is that several facets include sub-facets which are not related to the main facet in the same way. e.g., Facet 1, People, includes teachers, pupils, administrators etc.; Facet 2, Activities, includes information science, psychology, administration, teaching methods, pupils' work, criminology etc.; Facet 15, Things, includes audio-visual aids, buildings and furniture. There are 24 sub-facets in all; some are related to others, though this relationship is not indicated; for example, Testing activities in 2002, and Psychological qualities in 2015 and 2016, are separate from Measurement in 3001.

There are some very good sub-facets of a more generalised character, such as 5004 Closeness, Distance etc., 5006 Shapes, 8004 Male, Female, Race 8005 Age - these are separate from Facet 1 People and in 12002 we find Family relations, including biological relations, in Facet 12 which is in fact Social.

Many compound terms include the use of adjectives e.g., Academic.... Assistant...., Institutional...., and many compounds couple a specific adjective with an abstract noun e.g.... Item, ... Learning. Some of these can be justified, but others seem to be compounded unnecessarily, and their inclusion lengthens the list without really simplifying its use.

The International Bureau of Education Thesaurus

It is difficult to assess the contents of this thesaurus at the moment, because although the draft is presented as a set of seven facets, the terms in each facet are in alphabetical order, and hence no logical structure is visible. The International Bureau of Education, however, at work on grouping into sub-facets. The present list of facets is as follows: 100 Goals/Education policies. This includes a number of terms which do not seem to have a relation to the category heading. "Academic freedom" can be said to be a goal, but can "child welfare", "colonialism", "communism", "copyrights"; Adult Education? This facet would certainly be better separated into political, social, economic, legislation/aims, but even then some terms would have no obvious relationship to Educational goals or policies. 200 Planning/Educational administration. This also includes a number of strange terms such as accidents, reading research, research, air conditioning, competitive selection.

300 Teaching

400 People - logical basis but different types of people are included.

500 Learning.

600 Curriculum - points to the need for some pragmatic rules for exclusion of terms.

700 Things - again a mixture of different kinds of Thing, which points to a need for some sub-categories.

The influence of the Barhydt/Schmidt thesaurus is marked, but as the working out of some categories is still proceeding at the International Bureau of Education, it may well be that some of these points will be answered in the detailed analysis.

Ranganathan and Facet Analysis

Much of the modern movement in the direction of subject analysis into elementary and not compound terms has been the result of the work of S. R. Ranganathan and his concept of "facet analysis". Ranganathan introduced the term "facet", which has been so widely copied; and facet analysis, invented for the purpose of library classification, has now been demonstrated beyond doubt to have value not only for classification, considered as a means of arranging books on shelves or cards in files, but also as a technique for subject analysis applied to post-co-ordinate indexing and the formulation of enquiries. Ranganathan pointed out that the traditional method of generic classification has been confused because the compilers and users of classification schemes had not distinguished between subjects and objects, and therefore had incorporated compound subjects into their schedules as if they were simple subjects, and listed them as species of subjects having a wider range. Consider for example the following two sequences:

Mammals	599
Primates	599.8
Apes	599.88
Gorillas	599.884

Fundamental forms of Education	37.018
School Education	37.018.2
Attitudes of parents to school	37.018.26
Parent-Teacher relations	37.018.263

It will be clear that the first set of terms is a taxonomic hierarchy, in that gorillas are a species of mammal and of primates and of apes, and that each term in the sequence is generically related to the term preceding it. In the second group no such relationship exists. In what sense can it be said that "Parent-Teacher relations" is a species of "School Education", etc.? Since the second group of terms is in fact a quotation from the latest edition of the UDC Class 37, it is clear that the clarification of division in a scheme of terms for indexing has still a long way to go.

Ranganathan's point of departure was that, within a given subject field, the terms used by authors can be divided into categories, or "facets", each of which contains only those terms which bear the same relationship to the main class itself. Thus any one facet would be a list of terms arrived at by dividing the main class by one, and only one characteristic of division. These facets are listed in his Colon Classification under each class, but the act of classifying the Colon Classification is a process of assembly of terms from the required facets in a post-co-ordinate fashion; in other words one does not look through the schedule until one finds exactly the topic of the document in hand, one analyses the document into its constituent subject term, finds these terms in the schedules, and assembles them by means of the notation. It will be recognised that this process is exactly similar to the use of the analytical tables in UDC, but in the Colon Classification the analysis in the schedules is carried out much more deeply and in a much more systematic way.

Ranganathan identifies facets by means of the concept of "Fundamental Categories". He claims that all facets can be related to a set of basic notions, of which there are only five: Time, Space, Energy, Matter, all of which are reasonably clear; and a fifth, Personality for which he has a special explanation. His explanation has never been as entirely satisfactory as the explanation of the other four, and there have been published several criticisms of it. In brief, by Personality he means the embodiment of the core idea within any class; the characteristic set of terms which determines the particular range of that subject class; those concepts whose nature determines the nature of the concepts in the subsequent categories of Matter and Energy. This is most easily illustrated by an industrial technology. In a technology, the end product is the reason for its existence, and therefore the terms denoting the end product form the Personality facet. In container manufacture, the types of container - bags, boxes, cans, cartons, etc. - are the terms which constitute the Personality facet. The material which goes to make up the product constitutes the Matter facet - paper, wood, metal, etc.; the processes which shape the material to make up the end product constitute the Energy facet. Space and Time are geographical and chronological sub-division, as in the UDC. Most other research workers in classification and indexing have not used these fundamental categories, though they have been found useful as a check on consistency of division in certain cases. Most of the schemes for special subjects constructed by the method of facet analysis have adopted a rather more pragmatic approach, deriving their categories from the literature of the subject itself, and naming them according to the names given within that particular subject.

A facet may consist of entity terms, such as Elements in Chemistry, or Crops in Agriculture; forms of entities, such as Solid, Liquid, Gas; operations made on entities, such as Combustion, Forging, Harvesting; tools for operations, such as Presses, X-Rays for Therapy, Microscopes; states of being, such as Health and Disease. Even discarding the formal notion of "Fundamental Categories", therefore, one still requires the same process of abstraction to identify facets in order to achieve consistency in the enumeration of terms, and the avoidance of duplication and ambiguity in allocating terms to facets.

Applications of facet analysis

In applying facet analysis to a subject in the more pragmatic way adopted by most users, a representative sample of the literature is examined and subject analyses made. It soon becomes clear that the terms group themselves naturally, and represent the various aspects of the subject, each of which may be given a separate identity, at least conceptually, even though in practice it may be impossible to separate some of them into such "static groups".

Once the facets have been identified, it becomes a relatively simple matter to take the rest of the subject from dictionaries and encyclopaedias, and group all the terms into these facets. Again, in a technology, there is very little doubt as to which facet a term belongs to, and very few questions of ambiguity arise. In the social sciences this is not always the case by any means, but nevertheless one can proceed in a somewhat similar manner for much of the time.

What is required is to produce a display of relationships which is helpful to the user, which means that it should correspond to a way in which he can reasonably think about his subject, and enable a match to be made between the structure of an index and the terms of an enquiry. The compiler of a thesaurus must therefore understand the logic and the structure of the subject, so that the display of terms in the structured part of the thesaurus is both visible, and acceptable to the user. There should be the minimum ambiguity about the location of terms: there should be few terms which raise the question, "Why is this term placed in this category?"

Facet Analysis in Education

What, then, is the logic of Education? It is well known that this is a very subjective and intractable topic, and there are many philosophical discussions about "Aims", "Objectives", "knowing how and knowing that" etc. It would be easy to fall into a state of confusion here.

especially when one remembers the very wide differences of opinion that exist between the various groups, like the "de-schoolers" on the one hand and the supporters of the British Public School system on the other. Since, therefore, a major characteristic of an indexing language is that it should be neutral, the insistence on listing only elementary terms is the main,perhaps the only way of achieving this neutrality. If terms are not combined in the system, then there is much less chance of subjective judgments on classification being included.

The basic process of Education is the acquiring of information, understanding, knowledge, mastery of skills, etc., from sources of these things by those who do not have them. We may start then with the category of person: the learner or "Educand". Without these there can be no education. Many writers emphasise the importance of the curriculum, and it is true that for many users of educational documentation, the curriculum subject is their first point of approach. But we do not set up an educational system in order that we shall all know more about any particular subject; every subject has educational value, but no subject is the basic reason for establishing a system. We set up an educational system in order to produce educated people, and whatever importance any individual user may attach to any particular category, or whatever meaning may be attached to the word "educated", none of them would deny that people in the role of Educands are the most important and primary category.

For the identification of other facets, Ranganathan has put forward the intriguing but useful notion which he calls the "Wall-Picture" principle: that one cannot hang a picture without the prior existence of a wall on which to hang it.

Thus, given "Educands" as a basic starting point, one can proceed to enumerate a logical sequence of ideas, each of which depends on the ones that have gone before. One may ask the question, What do they learn? This gives us a category related to the curriculum. How do they learn? This gives us a category related to learning and teaching methods and processes. Given that one way of learning is to be taught, one can ask the question, Who teaches? This gives us a category related to teachers and the teaching profession. Having assembled our learner, our subject and our teacher, we may then ask, Where does this teaching and learning go on? This gives us a category related to educational buildings etc. How does one organise all of these things? The management and administration of educational system. In what social context are all these processes carried on? What is their history? What are the guiding principles which have inspired teachers and organisers to operate in precisely the manner they have done?

All the above questions are not necessarily "objective", but at least they are neutral, in that they are not committed to any point of view, but could act as a framework for the neutral description of all accounts of educational systems, objectives, and organisation. The application of facet analysis, not half-heartedly as in the UDC or even in the Barhydt/Schmidt thesaurus, but in the disciplined and consistent manner of Ranganathan, will easily provide a structure that reflects a logical sequence of notions like the above.

London Education Classification

The London Education Classification was the first attempt to apply the theories of Ranganathan to the field of Education; it was first worked out in 1963, and had some influence on the Barhydt/Schmidt thesaurus, since its compiler was in the United States in 1964, and discussed the problems with Gordon Barhydt. The rationale behind the LEC facets was discussed in the introduction to Supplement Six of the Education Libraries Bulletin (15) and the scheme had been in use in the University of London Institute of Education Library since 1965, for the Education section. It has proved very successful, but several modifications have been found to be necessary in the practice of classifying current acquisitions to the library. One of the basic difficulties has been to identify the "core" facets, that is, those facets that are characteristic of Education and not of some other subjects as well. For example, many critics of the LEC when it first appeared, stated that in their view the curriculum facet should be in the primary facet. The argument against this in the LEC was that outlined above: Education systems do not exist in order to teach subjects, but so that

people may learn, and therefore Educand should be the primary facet. This controversy is still unresolved, but it does not particularly affect a thesaurus for computer storage and retrieval, where the sequence of facets is unimportant. But another argument is very important in respect of the curriculum facet: since any "subject" can in principle be taught, are we therefore to list all possible subjects in the curriculum facet, and in the thesaurus? The proper solution may be to list only the names of the subjects taught up to secondary level, and then for post-secondary level to include only broad terms, and if possible, to rely on integration with other thesauri such as the Aligned List of Descriptors and Jean Viet's Thesaurus for Sociology (16); if something is developed for UNISIST as well, then this would be another obvious source. It might be practical also to recommend to potential users that they should use an existing classification scheme such as UDC or the new version of Bliss' Bibliographic Classification, which will both cover the whole of knowledge.

What must not be overlooked, of course, is that at each point where another scheme may be used to supply further detail, a full reference to that scheme must be made. This applies pa ticularly strongly to a classification schedule or structured part of a thesaurus.

The main criticisms of the existing LEC are that it fails to distinguish between teachers' work and students' work adequately, it has no facet for the medical, physiological and health aspects as a separate branch of study; and its treatment of what have come to be known as "foundation studies" is very inadequate. The separation of teachers' work and students' work has now been done and has brought considerable clarification of these two areas; it has of course made classifying much simpler. It now seems essential that there should be a facet for Health and Hygiene, and that Philosophy, Psychology, Sociology and History of Education should also be given better treatment. Psychology and Sociology have been quite well developed in the Barhydt/Schmidt thesaurus and there are also many terms in these areas in the ERIC Thesaurus. History and Philosophy have both been treated very scantily in all the existing schemes. As for History, it is true that not much can be done about the enumeration of terms, apart from historical periods, which should be taken from an existing list such as UDC, and the inclusion of terms denoting historical entities such as schools and other institutions which no longer exist. Thus, in English, historians may write about "Dame Schools" or "Central Schools" and any documentation system must be able to cope with these articles. It would be no service to the educationists if the EUDISED Project were to ignore the needs of historians (for far too long, educational research has been regarded as psychological research only). In Philosophy, the case is somewhat different from history, since there are many terms now coming into common use in educational literature; the difficulty here resembles rather the difficulty one finds in Psychology and Sociology, namely that we are not trying to make a classification of Philosophy, but only of Philosophy of Education. The difficulty is, where does the boundary line occur? In the case of Psychology, the LEC's original solution was to include only those terms which appeared under the heading of Educational Psychology in the contents of Psychological Abstracts; but this soon proved inadequate, and the Psychology facet of LEC has grown more quickly than any other. (This in spite of the fact that Psychology per se is a separate class in the University of London Institute of Education Library). In Philosophy however no such solution is available so we have to make a pragmatic decision. This may well turn out to be the most difficult of all areas to stabilise, since it is well known that philosophers of education do not even agree among themselves as to what they are supposed to do, let alone the area of discourse in which they are engaged.

But taking this into account the actual literature of education, and the fact that the Barhydt/Schmidt thesaurus has never been used in actual practice, the facets of the LEC do provide a more consistent logical sequence than those of any other scheme, and might therefore form the basis for the development of a set of categories appropriate for the EUDISED Thesaurus. A detailed revision has produced the following list:

1. Educands - Exceptional, Handicapped, etc.
2. Schools, Colleges, etc.
3. Curriculum
4. Teaching Methods
5. Teaching Aids, Audio Visual Media, etc.
6. Students' work
7. Teaching Profession (cf 10)
8. Psychology, Measurement, Assessment, etc.
9. Administration and Management - Awards
10. School and College Officers (cf 7)
11. Building
12. Equipment
13. Administration
14. Educational Sociology
15. Education - Theory and Philosophy
16. History of Education
17. Comparative Education
18. Documentation of Education

In practice, it has been found advisable, in arranging documents, to combine facets 1 and 2, in order to keep together the literature in such subjects as "Adolescent" and "Secondary School"; but it is still necessary, at least in beginning an analysis, to preserve the conceptual distinction. Further details are given in the Appendixes.

PEOPLE Category

All schemes so far have included a category of "people"; some go on to divide people into sub-groups or sub-facets. If the structured section is to have a logical and consistent display, it seems important to acknowledge the different roles, or relation to the main field of Education, that people play. Students, teachers, administrators all play different roles in Education, and if the structured section is to make sense to users, it must not only acknowledge, but also be specific about the difference between the roles. One of the difficulties in Education of course is that all people can at some time be educands; there are courses for educating teachers, parents, administrators, etc., and the curricula of these courses are determined by the fact that they are teachers, administrators, etc. But when they are in these roles, they are acting as students as far as education is concerned; they are not acting as administrators or teachers. It is therefore essential that these roles should be differentiated, and preferable that there should be, as in LEC, different facets for these different classes of person. This will be particularly important if the classified part of the thesaurus is to be used for the systematic arrangement of documents, as it would be in the University of London Institute of Education Library for example.

THINGS Category

What are "things" as a category? The term Things, as a class, covers an enormous multitude and variety of entities, and the question arises of how they should be defined within a particular context. Are they simply defined by enumeration? Are they, as seems to be implied in the International Bureau of Education and Barhydt/Schmidt thesauri, to be considered only as solid objects, such as audio-visual materials and equipment? In this case how are we to identify what should be classed as a Thing? In Barhydt/Schmidt there is a very small mixture, the facet containing mostly audio-visual equipment, but there are several terms which relate to other aspects of buildings, etc. No criteria appear to have been laid down for the identification of terms which would go in the "Things" category. Of course, it is possible for this to be used as a very general notion, in the manner of Ranganathan's Fundamental Categories, and identified as something which was qualitatively different from People or Activities. But even at this level, "Things" are not specifically an "educational" concept. For example, we can speak of educating

People or educational Activity, using the terms People and Activity in a sense which is well understood by users of a documentation system, but, on the other hand, we cannot speak of educational "Things" with any real significance. As with the Fundamental Categories, if we use a category such as "Thing", this must be given a material substance in practice much more specifically in relation to the educational context. If we do this, as has been done in the International Bureau of Education and Barhydt/Schmidt, it is clear that the resulting set of terms is a mixture of more than one type of thing, a group of categories in fact, each category bearing its own characteristic relation to the general field of Education. As with "People", therefore, it seems desirable, for clarity of thinking and use, to separate the general category of thing into a number of more specific categories with their own specific names.

Sequence of terms within categories

Because the idea of listing terms in a set of categories is to provide a structured section of the EUDISED Thesaurus, we have also to examine the problem of the sequence of terms within a facet, once we have decided on which terms go in which facets. Several possibilities are available, but the one most commonly favoured so far is alphabetical listing; this occurs in the International Bureau of Education, ERIC and Barhydt/Schmidt. It is true that alphabetical listing appears to be the simplest and most straightforward way of enumerating a set of terms which all come within the same group. On the other hand, there are two major objections to this: (1) it does not work for a multi-lingual thesaurus; (2) it does not provide a structure, since concepts denoted by terms are not related to one another through the position of their initial letter in a national alphabet. It is strongly recommended therefore that the only place in which alphabetical listing should be permitted is where a decision has been taken not to elaborate a particular class in the thesaurus, but to make provision for further sub-division should any particular national documentation system need to do this. For example, in the LEC, no attempt has been made to provide a set of specific terms for individual Games and Sports. There is a class heading Games and Sports, and within this, sub-division can be made alphabetically by the name of the game; there is no advantage to be gained in this particular classification by a sub-division into ball games, card games etc., though of course such a systematic sub-division might very well be required in a classification of Games and Sports. The important point to note about this is that the class itself should be itemised in the thesaurus, so that all the participating countries use the same class term and place within the structure; at that term, there should be a Scope Note to the effect that further sub-division may be carried out by individual centres if they wish, in any way they like. It would seem superfluous for the EUDISED Thesaurus to try to lay down schemes for sub-division of class terms which will not attract very much literature and which are "marginal fields" to education.

Elsewhere, alphabetical sequence is not recommended. There are several alternatives: chronological, evolutionary, nearness in space, geographical, etc. In the LEC, for example, the Educand facet is arranged in ascending order of age groups, beginning with the infant, and going on to old age. This corresponds to the ISCED sequence of "levels". In the Teaching Methods facet, Blackboard precedes Radio which precedes Television, which might be regarded as some kind of evolutionary sequence. Again, the objective should be to display the terms in a structure which has some logical foundation and therefore makes sense to the user. An examination of the ERIC list or even the Barhydt/Schmidt list shows how illogical the alphabetical sequence looks: for example, in the Barhydt/Schmidt we find the sequence "Divorced, Marital Status, Married..." which is not what a normal logical sequence would provide, or what the normal user would expect to find.

ERIC and Barhydt/Schmidt are characteristic of the overwhelming emphasis in the USA on the alphabetical or dictionary catalogue. In Europe on the other hand, classification is well established, and alphabetical sequence is recognised as being extremely unhelpful in a multi-lingual community. The UDC is widely known and used, and there should therefore be no resistance at all to the idea of a close and specific structure within facets in the EUDISED thesaurus. Clearly, each set of terms will require detailed examination for its own logic, and no hard and fast rule can be laid down to be applied mechanically in every facet.

CONCLUSIONS

This account has shown briefly how a number of writers concerned with the structure of the field of Education, as well as makers of classification schemes, have commented on the value of setting up a system of categories of terms in order to define and make clear their notion of the structure of the field. We can now summarise the arguments for including a structure of categories in the kind of authority list known as a Thesaurus. In their practical manual, Thesaurus Construction (17), Jean Aitchison and Alan Gilchrist point out the pros and cons of controlled versus "free language" thesauri, and they emphasise that "in free language systems the words of the author are not distorted, during translation, into the pattern of the imposed indexing language, and except where the 'free indexing' system is used there can be no indexing errors and no possibility of lack of specificity. There is no delay in incorporating new terms into the vocabulary, as a new term is a part of the language as soon as it appears in title or text, or is selected by a single 'free indexer'". This means that, with a simple alphabetical list, there are no problems of classification of terms or definition of meanings except insofar as the BT, NT and RT entries are concerned, and there are no constraints in relation to the indexing of new terms, or even old terms used in a new way. On the other hand, as Aitchison and Gilchrist go on to point out, while this is very convenient for the indexer - that is at the input stage - it is not nearly so convenient for the searcher. In searching an index, in an operational situation, one can never be at all sure that the enquirer will use the same terms as those which have been used by the authors of documents that he would like to have, and many years of experience in libraries and information centres have shown that it is necessary to provide some kind of guidelines for the searcher (whether the enquirer himself or an information officer working on his behalf), so that he can be reasonably sure that he has thought of all the entry words that might be useful to him. He is not confined, in other words to the term or terms that he happens to have in his mind at the moment of making the enquiry.

It is clear, of course, that the use of free language indexing is very economical at the input stage; indeed, one would suppose that it could quite satisfactorily be done by clerical labour. A librarian or indexer could quickly scan a document, underline those words that needed indexing, and simply pass the text to a key punch operator who would carry out all the other necessary operations. Professional expertise would be used at a minimum, and therefore costs would be kept low. The situation is the reverse for the searcher, who has no help in using the index, and is likely to be thrown back again and again on his own resources, when his very purpose in making the enquiry is precisely to obtain the information to improve those resources. In fact, libraries and information centres have always made use of controlled vocabularies for their indexing, on the very reasonable grounds that the indexing of a document takes place only once, whereas a search for that document may take place many times; effort expended at the input stage on one occasion will therefore save effort at the search stage over and over again. It is only with the advent of computers that the question of free language indexing has been raised, supposedly on the grounds of economy. But it must be pointed out that this economy is solely for the producer, and it is analogous to the economies effected in mass production industries, where costs are reduced to the minimum without always taking into account the interests of the consumer. While much has been made of the possibility of direct interaction between reader and store in the future information centre, in practice it is increasingly found that a skilled intermediary is required, in order to interpret the requirements of the user in terms of the potential of the system. If this intermediary is a skilled information specialist, he will be able to use an alphabetical thesaurus because of his familiarity with it and its mode of construction. If the intermediary is not an individual, but the system itself, then there must clearly be some alternative to the mind of the information specialist, which will help the user to formulate his question simply and quickly in terms that the system can deal with. Thus there is a basic "information system" argument strongly in favour of a structured section to be added to any alphabetical thesaurus.

In the context of EUDISED, there are two additional powerful arguments. The first is that EUDISED is operating in a multi-lingual environment. Where terms are being used in several languages, to denote concepts which are not precise equivalents, as in the field of Education, it is all the more necessary that there should be very clear definition of the concepts that are being indexed, and their relation to the terms in the other several languages. For example, from the alphabetical list of English terms, the word "Matron" has been listed in the French list as "Mère de Famille" whereas in the classified schedule this term is shown as one of the school staff, concerned with domestic matters, and not as a synonym for "Mother", as derived from the original Roman significance of this word.

In the second place, the EUDISED system is to be used by many different kinds of organisation. Once again, the experience of those organisations is likely to vary widely, and it is all the more necessary therefore that each term should be displayed in a context that is structured sufficiently to give a very clear indication of the way in which the term is used, and the range of concepts with which it is related.

It is of course true that this kind of relationship can be shown in a well constructed alphabetical thesaurus through the SN, BT, NT, and RT entries. The main point is that a classified array, particularly a faceted array, is very much simpler to use; the searcher can see at a glance all the relations that are displayed by the list of facets, and within each facet he can see at a glance all the relationships between the terms in that facet. To follow up this chain of relationship through the medium of an alphabetical array would be enormously time consuming; it was for this very reason that the Barhydt/Schmidt thesaurus chose to refer directly to a sub-facet number from each term in the alphabetical array, and did not list any of the terms that appeared in the same facet as BT, NT or RT. In the context of a multi-lingual and multi-national system such as EUDISED, therefore, it is essential that any alphabetical thesaurus should be backed up by a structured system based on a clear and precisely defined set of categories. The inclusion of a term in a particular category acts as a kind of definition of that term, and helps to explain its manner of use both to an indexer and to a searcher. It will explain to the indexer the way in which any term is to be used in indexing, and also the way in which any term found in the documents is to be entered into the system; it explains to the searcher the way in which the indexer has used his terms, and helps the searcher to channel his own thinking along the same guidelines. This does not of course mean that constraints are to be put upon specialists and research workers in their own use of the language. The purpose is solely related to the use of the system and it must be emphasised that its objective is to help in the standardisation of language for indexing and retrieval purposes, and the ensuring of compatability in both of these processes throughout all the participants in the EUDISED scheme. Without these two factors, there is a very real danger of proliferation of individual and idiosyncratic systems which cannot be brought into relationship with one another, and as far as information storage and retrieval is concerned, this would defeat the whole purpose of the EUDISED operation.

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A note on the construction of a Thesaurus of English Educational Terms

For several years the British Classification Research Group has been of the opinion that a faceted classification would make a good basis for the construction of a thesaurus, and a few articles on this have been published. The idea was that the majority of thesauri that had been published, mainly in the technologies, had lacked a systematic structure and their terminology had therefore lacked consistency and suffered from vagueness and duplication, and in some cases this had resulted in a very much larger list than would actually have been necessary. These faults make it very difficult both for the indexer and for the searcher, and the examination of the MEDLARS system by F. W. Lancaster underlined the advisability of a systematic structured adjunct or addition to a thesaurus in order to overcome some of these deficiencies. The C.R.G. was of the opinion that a faceted structure was the most suitable form of this system, and the publication of the Thesaurofacet by Jean Aitchison and her colleagues of the English Electric Company demonstrated very conclusively the advantages to be gained by a combination of a faceted classification and a thesaurus with a structure of cross references built into its alphabetical sequence. In fact, a similar effort had already appeared in the field of Education, the Thesaurus of Educational Terms by Barhydt and Schmidt. This made use of the faceted structure to shorten the thesaurus by omitting all related terms that appeared in the same array in a facet. Instead, the number of the facet was given and the user was referred to the faceted part of the thesaurus. Thus under the word Angle there appeared only RT 5006 and no words at all. This referred the user to facet 5006 - namely the sixth sub-facet of facet 5, a general facet for "Relationship" terms. At facet 5 sub-facet 5006 we find other terms applying to shape such as Cube, Ellipse, Form, Shape, etc. Thus, as in the Thesaurofacet, the user is strongly advised to use both the alphabetical array and the faceted array to derive the maximum possible value from the system. Other related terms that do appear in the alphabetical array are taken from other facets. This thesaurus also demonstrates a rather interesting variation on what might be expected from a combination of alphabetical and faceted arrays. Normally, one would expect to find the hierarchical structure within the facet; in the Barhydt/Schmidt this is not the case. Each facet is divided into sub-facets but the terms in each sub-facet are set out in alphabetical order, though there are some further sub-groupings. In the alphabetical array, however some BT and NT relationships are shown, and these do not appear in the faceted array. Thus, we have the following:

ADOLESCENCE	
SN	Age twelve to twenty one
UF	Teenage
NT	Early Adolescence
	Late Adolescence
	Mid Adolescence
RT	8005

A little lower down in the alphabetical array, we find the following:

ADULT	
SN	Age thirty to forty five
BT	Maturity
RT	8005
	Adult Education

If we now turn to sub-facet 8005 we find all of these terms arranged in one alphabetical sequence, so that Adolescence, Early Adolescence, Late Adolescence, Mid Adolescence are all separated from one another by words like Age, Baby, Infancy, Maturity and so on. The related term Adult Education actually appears next following Adult in the alphabetical array, but is taken from sub-facet 2012.

Thus, the Barhydt/Schmidt thesaurus, though it has a certain amount of faceted structure, does not use the advantages of this structure to anything like the same degree as the Thesaurofacet, and it is indeed difficult to see why the decision was taken to mix up alphabetical and systematic collocations in both the alphabetical array and the faceted array.

The first stage in constructing the English Thesaurus was a revision of the LEC. Some particular faults in the LEC first edition were studied at this stage; in particular, the very inadequate provision for matters of Human Biology, Health and Hygiene, and the likewise inadequate provision for Foundation subjects. The explanation for the latter may well be found in the rapid development of the subject during the years since the first edition of the LEC was published. Even in the United States, the term "Foundation subjects" has lately been coming into use as well as in the United Kingdom.

Another important point relates to the LEC facet for Educands and Schools. In the original edition, it was decided to combine these two separate categories of terms, for the very sound reason that in a classification scheme for the arrangement of documents, it would be unwise, and at times impossible, to separate documents which dealt with the education of children at various stages of growth, and the type of school in which they are educated. For example, it would be unwise to provide separate sequences for works on, say, "The Education of the Adolescent" and works on "Secondary Schools". The only exception to this separation was that of "Exceptional Educands", in particular the education of the handicapped. The reason for this was that in documents discussing such topics, the emphasis is very much on the special provision that has to be made, rather than on the type of school. There would in any case be no difficulty in combining educand and school; for example, documents on the education of deaf children in normal schools would be classified at Deaf Children, with a sub-division from the facet Educands and Schools relating to the primary or secondary level, as required. This would continue to bring all matters relating to the education of deaf children together, but the addition of the school facet notation would bring out an analytical entry in the index along with works relating to the type of school. This amalgamation of the "average" educand with the type of educational institution he or she would be attending has worked perfectly satisfactorily in the ULIE Library for nearly ten years, and as far as a classified arrangement is concerned, there would be no reason whatever to change this decision.

However from the point of view of an educational thesaurus in relation to the EUDISED Project, it was decided to keep the educand facet and the school facet separate. This would enable the conceptual distinction to be maintained, and would be more consistent with the logical foundation for the selection of facets for the structured part of the thesaurus. Thus in the new system, the "average" educand terms are included in the same facet as the "exceptional" educand terms; that is to say the order of educands by age group in chronological sequence has been put into the same array as the groups of exceptional educands such as the gifted and the handicapped. The terms denoting all educational institutions have been listed separately in another facet. It is inevitable that there should result from this a great deal of parallel arrangement, and a deliberate decision was taken to arrange the educational institution facet in the same chronological sequence as the educand facet itself. At first sight, it would appear that this would give a certain amount of unnecessary duplication, and in the final publication of the system it may well be decided to revert to the amalgamation of the two facets. Care has been taken, of course, to provide the necessary linkage in the thesaurus part of the system by listing under RT all those terms in the one facet which would relate to the similar terms in the other.

The first draft of the new facet classification was then completed; the terms were arranged into a classified sequence for each facet, without reference to the existing edition of the LEC. The next step was to compare the new arrangement with the first edition of the LEC. In some cases, particularly those changes which have been mentioned above, in the Health and Hygiene facet and the Foundation subjects, some terms were subject to quite considerable rearrangement. Other minor modifications were made in the light of work and developments in the field of Education itself.

Educational Publications
- Books
  - Children's Book
  - Textbook
- School Magazines and Newspapers
- Periodical
- Comic

This would give the following thesaurus entries :

Educational Publications

BT	Teaching Aids
NT	Books
	Periodicals
	School magazines and Newspapers
RT	Audio-visual Aids
	Resource centre

Book

BT	Educational Publications
NT	Children's Book
	Textbook
RT	Periodical
	Reading (from Curriculum facet)
	Reading tastes and habits (from Students' work facet)
	School Magazine and Newspapers

Children's Book

SN	Book produced for children's reading, but not primarily as school book
BT	Books
RT	Periodical (from following array)
	Reading (from Curriculum facet)
	Reading tastes and habits (from Students' work facet)
	Textbook (from same array)

Textbook

SN	Book prescribed for a particular course
BT	Educational Publications
RT	Children's book

School Magazines and Newspapers

UF	School newspaper
	Student magazine and newspaper
BT	Educational Publications
RT	Books
	Children as writers (from Students' work facet)
	Periodicals

Periodical

UF	Journal and magazine
BT	Educational Publications
NT	Comic
RT	Books
	School magazines and newspapers

When the first list of all the facets had been completed, work was begun on the construction of the thesaurus, or the alphabetical part of the system. This involved a listing of the terms in alphabetical sequence, with the addition of Scope Notes, Use For, Use, Broader Term, Narrower Term, and Related entries. As has already been mentioned, the Barhydt/Schmidt and Thesaurofacet systems do not include under BT, NT or RT headings those terms that feature in the same classified array of the faceted section; but in this case it was decided that, at least in the first instance, all these terms would be included in the thesaurus under the appropriate heading. This proved to have a considerable advantage, in that it suggested a number of extra RT in particular from other facets. For example, a term might appear in the RT list under two other terms, which stand in a BT/NT relation to each other. Thus, Intelligence is BT to Reasoning and under Reasoning we have the following:

Reasoning	
BT	Intelligence
RT	Learning
	Mind
	Tests
	Thought and Thinking

The RT Learning and Tests also appear under the entry for Intelligence, where Reasoning appears as NT.

Intelligence	
BT	Psychology of Education
NT	Reasoning
RT	Learning
	Mental Development
	Personality
	Tests

Occasionally, an RT list will demonstrate the converse, and include both a class term and its sub-divisions, terms which stand in a BT/NT relationship to one another:

Handicraft	
RT	Art
	Pottery
	Puppetry
	Sculpture

Pottery and Sculpture are NT to Art, but it was felt that these might reasonably be put in as RT to Handicraft as well, since this would be helpful to the user, and would shorten the time he had to spend in pursuing a chain of references.

This last consideration has in fact influenced the RT entries in a number of other cases, where additional entries have been made in order to avoid a rather lengthy chain of references for the searcher.

The compilation of the alphabetical array from the schedules of the faceted classification is extremely simple. The schedules are set out with a good deal of indentation to show hierarchy. This meant that the BT, NT and RT relations were particularly easy to identify, bearing in mind that all hierarchical references were to be shown in the thesaurus. Thus, the first step was to make an entry for the heading itself, and then for each term in the facet. Under each main division term the facet heading was listed as BT, its own sub-divisions as NT, and as RT those of the other main divisions which seemed appropriate. RT were also included from other facets as necessary. To take a simple example: under Teaching Aids in facet 5, a main division is Educational Publications where we find the following:

Comic
BT Periodical
RT Books
Reading tastes and habits

The occasional inevitable subjectivity is illustrated by the latter entry, with no RT to Reading as Comic was not considered part of Reading as an educational process.

The difference in approach is well illustrated by comparing the entry for Reasoning above and the B/S entry for Reasoning. In the alphabetical array we find:

Reasoning
SN (meaning a vague term which should be used in combination with another term)
RT 2016
Logical organisation
Reasoning ability

Reasoning ability is the term immediately following Reasoning in the alphabetical array. Sub-facet 2016 contains 46 terms in all. They are divided into 8 sub-groups, of which the group which contains reasoning contains 11 terms; these 11 include Thinking and a number of compounds such as Creative Thinking, Critical Thinking, Searching Behaviour, but not Intelligence, Learning, Mind, Tests, or Thought.

The next entry in the alphabetical array, Reasoning Ability has RT 6001 and Reasoning; in sub-facet 6001 there are 32 terms in all, including Ability and several compound terms with Ability, and Intelligence.

Compound terms have been avoided in the English Thesaurus wherever possible, but there are some exceptions. These apply to a number of quite well recognised categories. Firstly, terms like "educational", and "school" are very occasionally used where the absence of the adjective, or the inversion of the compound would be much less helpful in searching: educational technology, school play, curriculum design. Secondly, some partially comprehensive headings have been included, on the basis of past experience with the literature; this means that one sometimes finds articles which deal with a pair of related topics such as "recruitment and conditions of service", where both recruitment and conditions of service need to be listed separately as well as in the partially comprehensive heading. In some cases such a dual heading is used, where the literature is unlikely to be very large, and again two branches of the heading are likely to be treated together in the same article; "Diagnosis and Treatment" in the new Health and Hygiene facet, for example. "Ancillaries and Auxiliaries" is used as one of these double barrelled headings because both terms are used and there is not a general agreement on the definition of either; in this case, it seems safer to put them together, so that the user of the system will be quite clear that this is the heading, whichever of the terms has been used, with whatever definition, by the writer of the article being indexed. One difficulty may well be peculiar to the English language: this is where two different terms are used for the male and female holder of a particular office, for example, Housemaster, Housemistress. One can solve this particular difficulty in respect of Head Teacher, where under Headmaster and Headmistress one can put a "Use Head Teacher" reference, but there is no such well-known generic term for Housemaster and Housemistress, and to use Housemaster alone is liable to be misleading. The heading "Housemaster, Housemistress" has therefore been chosen, and under "Housemistress" there is "Use Housemaster, Housemistress" reference.

Some double terms are synthesised, as being preferable to co-ordination at the time of indexing. These include terms which give rise to sub-divisions, such as "Parental Deprivation, Maternal Deprivation, Paternal Deprivation".

Related to Parental Deprivation are two other types of entry: Mother - Child Relation, and Father - Child Relation; these are both NT to Parent - Child Relation and the "Deprivation" term has been included under the appropriate parent. Thus "Maternal Deprivation" is NT to Mother - Child Relation. Under Mother - Child Relation and Father - Child Relation, we have also RT to the opposite parent, and to the BT of the Deprivation relation. This gives entries like the following:

Father-child relation	
UF	Child-Father relation
BT	Parent-child relation
NT	Paternal deprivation
RT	Adoption
	Mother-child relation
	Parental Deprivation

Thus, terms like Maternal Deprivation and Paternal Deprivation are listed in the thesaurus as NT to two different BT, though in the classification schedules, of course, they appear in only one place.

Not all species of one particular class are in fact listed as RT to one another. In the facet for Building and Services, for example, under the main division Building there are listed nineteen different terms for various buildings. These fall into several natural groups: for example one group contains Library, Museum, Studio, Theatre, and another group contains Dining Hall, Kitchen, Tuck Shop. It seems likely that no useful purpose can be served for either indexer or searcher in listing all of the second group as RT to each of the first group, but of course all are listed as NT to the main heading. There will thus be two ways of finding the chain of references: one would be simply to refer in the thesaurus to facet itself, the other would be to refer on each NT to its related BT, where all other NT to the same BT will be listed.

British usage has been followed where the BEI differs from B/S, for example, Backward UF Retarded, Guidance UF Counselling. There are many specifically British terms which would probably not be found in any other system, such as "Public School", "Raising of the School leaving age UF Rosla"; "Rosla Use Raising of the School leaving age". But BEI usage has not always been followed: for example Psychology of Education is used in preference to Educational Psychology, by analogy with Sociology of Education, Philosophy of Education, History of Education.

Since this is a classification for Education, there inevitably appear some biased groupings to reflect the emphasis in this particular field. Thus Social Psychology is included as part of the Psychology of Education facet. The original attempt of the LEC to include in its Psychology facet only those terms listed as Educational in Psychological Abstracts proved to be a failure, and, as with other Foundation subject fields, Psychology of Education has been substantially enlarged. Social Psychology includes a number of terms that are required for the Educational documentation but there seems to be no justification for making this a separate facet, when it appears quite usefully as a main division in the Psychology of Education facet. This is not a particularly happy solution to the problem of marginal fields, of course, and once more highlights the necessity for considering a specialist Thesaurus or classification scheme, not merely as an isolated part of the universe of knowledge, but in relation to, and compatible with, similar schemes in other subjects.

Extract from Draft Revision of the London Education Classification

Facet 1 Educands
- Educands, general
- Infant, pre-school child, under 5 years
- Schoolchildren, general, arranged by age groups
  - Child, pre-adolescent
  - Adolescent, "Teenager"
- Student
- Youth outside of School
- Adult
- Exceptional Educand
  - Genius
  - Gifted, Brilliant
  - Handicapped
    - Physically handicapped
    - Mentally handicapped
    - Maladjusted, Emotionally disturbed
    - Socially handicapped, Culturally deprived

Facet 2 Educational Institutions: Schools, Colleges, Universities
- Educational Institutions, general
- Education in the Home
- Nursery and Infant Schools
- Primary, Elementary Education
- Secondary Education
  - Stages:
    - Lower
    - Middle
    - Upper
  - English types of school (or favoured country)
    - Comprehensive
    - Grammar
    - "Public School"
- Post-Secondary Education
  - University
  - University of the Air
- Adult and Further Education
- Continuing Education, Lifelong Education

Facet 3 Curriculum
- Curriculum, general
- Basic Subjects, "Three R's"
- Mother Tongue, Vernacular Language
  - Vocabulary
  - Conversation
  - Listening
- Language, general and comparative
- Humanities
- Mathematics
  - Arithmetic
  - Algebra
  - Geometry

Facet 3 Curriculum (continued)
- Science
- Engineering
- Social Science
- Arts
- Health Education
  - Sex Education
  - Mental Health Education
- Physical Education
- Vocational Education
- Curriculum Design
  - Classification
    - Traditional
    - Cross-disciplinary
- Curriculum Reform, Innovation
- Anti-Curriculum Movements
  - "De-schooling"

Facet 4 Teaching Methods
- Teaching and Teaching Methods, general
- Lessons
- Lecture
- School Visits and Travel
- Innovation, New Methods in general

Facet 5 Teaching Aids
- Educational Publishing
- Teaching Aids
  - Exhibition
  - Model
  - Laboratory Apparatus and Equipment
- Audio-Visual Aids
- Broadcasting and Television
- Educational Technology

Facet 6 Students' Work
- Study Method
- Composition
- Reading Tastes and Habits
- Interests

Facet 7 The Teaching Profession
- Professional Status
- Academic Freedom
- Recruitment and Conditions
  - Salaries
  - Leave

Facet 8 Psychology of Education
- Psychology of Education, general
- Learning
  - Learning difficulty
- Developmental Psychology
  - Stages:
    - Infancy
    - Childhood
  - Physical aspects
  - Moral aspects

Facet 8 Psychology of Education (continued)
- Mental Development
- Intelligence
- Achievement
- Personality
  - Attitude
  - Behaviour
  - Emotion
- Imagination
- Measurement
  - Tests

Facet 9 Human Biology, Health and Hygiene
- Human Biology
  - Family
  - Offspring
    - Sibling
    - Twin
- Physical Properties
  - Heredity
  - Growth
- Health and Hygiene
  - Medical Inspection
  - Nutrition
    - School Meals
- Disorders, Sickness
- Hazards
  - Drugs
  - Smoking
- Diagnosis and Treatment

Facet 10 School, College and University Management
- Administrative Structure
  - Governing Body
  - Senate
  - Department
  - Student Union
- Attendance, Absence
  - Term
  - Holiday
- Rules and Regulations
- Admission
- Leaving
- Courses
- Examination
- Finance, Expenditure
  - Income
    - State
    - Fee
    - Donation
  - Expenditure

Facet 11 School, College and University Officers
- Executive Officers
  - Chancellor
  - Vice-Chancellor
  - Dean
  - Head Teacher
- Academic Teaching Staff
- Academic Support Staff
  - Visiting Teacher
  - Librarian
  - Counsellor
- Ancillaries and Auxiliaries
- Administrative Staff
  - Secretary
  - Registrar

Facet 12 Building
- Architecture
- Buildings
- Building Services
- Recreational Facilities

Facet 13 Equipment
- Furniture
- Office Equipment

Facet 14 Planning, Economics, Administration of Education
- Economics and Education
- Planning
  - Policy Making
  - Manpower
  - Systems Analysis
- Economics of Education
  - Finance
  - Costs
- Administration of Education
  - Central Government
    - Parliament
    - Political Parties
    - Ministry
- Legislation
- Inspection

Facet 15 Sociology of Education
- Sociology of Education
  - Social Class
  - Social Mobility
  - Oppoprtunity
    - Educational Opportunity
  - Educational Priority Area
- Residential Community, Neighbourhood
- Sociology of the Family
  - Home and School
- Industry and Employment
- Criminology, Social Pathology

Facet 16 Philosophy of Education, Theory of Education, Research in Education

- Philosophy of Education
  - Epistemology
  - Concepts
    - Authority
    - Truth
    - Values
  - Aims of Education
  - Liberal Education
- Theory of Education
  - Principles
  - Models
- Research in Education
  - Research Method
    - Empirical
    - Data Collection
  - Testing Results
- Communication

Facet 17 History of Education

Facet 18 Comparative Education

Facet 19 Documentation of Education

EXTRACT FROM THE THESAURUS OF ENGLISH EDUCATIONAL TERMS

Ability

UF Inability

BT Educability
Mental development

RT Aptitude
Backwardness
Skill
Tests

Ability Grouping

USE Streaming

Able

USE Gifted

Abnormal

USE Exceptional

Abroad

USE Overseas

Absence

USE Attendance

Academic Administrators

SN Senior school, college and university officers

BT Staff

NT Chancellor
Dean
Director
Head of Department
Head Teacher
Principal
Rector
Vice-Chancellor

RT Academic Support Staff
Anciliaries and Auxiliaries
College Officers
Faculty

Academic Board

SN Academic authority of a university institute or college

RT Faculty Board
Senate

Academic Freedom

BT Professional Status and Ethics

RT Academic Units
Professional Ethics

Academic Games

SN Games devised to find solutions for academic problems

BT Group Work

RT Dramatic Presentation
Educational Games
Role Playing

Academic Staff

USE Faculty

Academic Support Staff

SN Professionally-qualified staff other than regular Faculty

BT Staff

NT Guidance Officer
Librarian
Peripatetic Teacher
Public Relations Officer
Teacher-Librarian
Visiting Teacher

RT Ancillaries and Auxiliaries
Faculty
Special Categories of Teacher

Academic Unity

SN of the teaching profession

BT Professional Status and Ethics

RT Academic Freedom
Professional Association
Professional Ethics

Accountant

SN College or school finance officer

UF Bursar
Finance Officer

BT Administrative Staff

RT Finance
Secretary

Accreditation

UF Recognition as efficient

BT Inspection

RT Inspectorate

Achievement

UF Attainment
Performance
Success

BT Psychology of education

RT Concentration
Developmental Psychology
Motivation
Tests

Act

SN Text of legislation enacted by government

BT Legislation

RT Bill
Statute

Activity Method

BT Group Work

RT Dramatic Presentation
Play

Actor, actress

USE Child actor, dancer

Adaptation

USE Attitude

Adjustment

USE Attitude

Administration of Education

SN of the national system

BT Planning of Education

NT Government, Central Inspection
Inspection
Legislation
Local Authority

RT Economics and Education
Economics of Education
Management of Education
Planning
State and Education
State Grant

Administrative Documents

BT Management of Education

NT Calendar
Charter
Prospectus

RT Administrative Structure
Documentation of Education
Records

Administrative staff

BT College Officers

NT Accountant
Clerical Staff
Registrar
Secretary
Warden

RT Academic Administrators
Academic Support Staff
Faculty

Administrative Structure

SN Plan of School, College and University Government

BT Management of Education

NT Academic Board
Convocation
Court
Department
Faculty Board
Governing Body
School Council
Senate
Student Union

RT Academic Administrators
College Officers

Admission

BT Management of Education

NT Class
Exchange
House
Integration
Selection
Streaming
Transfer

RT Attendance
Leaving School
Rules and Regulations

Adolescence

BT Developmental

RT Adolescent
Childhood
Maturity
Puberty
Secondary School

Adolescent

SN Educand at level of secondary education

UF Teenager

BT Schoolchildren

RT Adolescence
Child
Puberty
Secondary School

Adoption

UF Fostering

BT Parent-child relation

RT Father-child relation
Mother-child relation
Parental deprivation

Adult

SN Educand engaged in study course, older than usual age for tertiary education

NT Armed Forces
Merchant Navy
Older person
Parent
Police

RT Adult & Further Education
Mass Education
Maturity
Student
Vocational Education

Adult College

BT Adult Educational Organizations

NT National Extension College

RT Adult
Extra-Mural Department
Mature Student

Adult Education

NT College of Further Education
County College
Evening Institute
Industrial School
Summer School
Village College

RT Adult
Adult Educational Organizations
Mature Student
Open University

Adult Educational Organisations

BT Adult & Further Education

NT Adult College
Community Centre
Extra-Mural department
Mechanics Institute
Settlement
Workers Educational Association

RT Adult
Mature Student
Open University
Working class

Adventure Playground

USE Play Centre
Playground

Advising

USE Guidance

Advisor

USE Counsellor

Aeronautical Engineering

BT Engineering

RT Armed Forces
Military Engineering
Naval Engineering
Nuclear Engineering
Space Science

Aesthetics

BT Philosophy

RT Arts

Afro-Anglo-American Programme

SN 1960-1968

BT Developing countries and Areas

RT Association for Teacher Education in Africa

After Care

SN Social Welfare service for persons released from Borstal or prison

BT Criminology

RT Courts
Delinquency
Imprisonment
Probation
Recidivism

Bible

USE Scripture

Bibliography

BT Documentation

RT Archive
Index

Bilingualism

BT Language

RT Foreign Language
Mother tongue

Bill

SN Proposed test for debate prior to enactment as legislation

BT Legislation

RT Act
Statute

Biography of Educators

UF Lives of Educators

BT History of Educators

RT Historiography

Biological science

BT Science

NT Anthropology
Biology
Botany
Human biology
Nature study
Zoology

RT Medicine
Physical Science
Psychology

Biology

BT Biological Science

RT Anthropology
Botany
Human Biology
Medicine
Nature Study
Specimen
Zoology

Black Studies

BT International and Racial Studies

RT Racial Groups

Blackboard

USE Chalkboard

Blind and partially sighted

UF Partially sighted
Vision defective child

BT Physically handicapped

RT Vision defect

Board of Governors

UF Governors

BT Governing Body

Board of Studies

SN Variant title used for Committee of subject teachers

BT Faculty Board

Child

SN Educand at level of primary education

UF Pre-adolescent

BT Schoolchildren

RT Adolescent
Childhood
Primary School

Child actor, dancer

UF Actor, actress
Child dancer
Dancer

BT Mobile

RT Mobile school

Child dancer

USE Child actor, dancer

Child development and Psychology

USE Developmental psychology

Child in care

UF Care, children in

BT Socially handicapped

RT Disadvantaged
Evacuee
Illegitimate
Orphan
Refugee
Waif

Child labourer

BT Working class

RT Socially handicapped

Child-father relation

USE Father-child relation

Child-mother relation

USE Mother-child relation

Child-parent relation

USE Parent-child relation

Child-school relation

USE Teacher-pupil relation

Childhood

BT Developmental psychology

RT Adolescence
Child
Infancy
Primary school
Schoolchildren

Children as artists

BT Composition

RT Art
Children as Writers
Creativity

Children as Writers

BT Composition

RT Children as artists
Composition
School Magazines and newspapers
Writing

Community Leader

USE Youth and Community Leaders

Community School

SN Neighbourhood school catering for all academic abilities and all ages; distinguished from Community Home for young delinquents

UF All-age school

BT Secondary education

RT Comprehensive School

Comparative Education

SN Study of the comparison of current educational theory and practice in different countries

NT Comparative Education Method
History of Education
Intercultural Education
International Education
International Understanding

RT International Organisations

Comparative Education Method

BT Comparative Education

NT Area Study
Case Study
Historical Method
Philosophical Method
Problem Method

RT International Education
Intercultural Education

Competence

USE Skill

Competition

BT Emotions

RT Aggression
Conflict
Prejudices
Tolerance

Composition

SN Pupils' essays

BT Students' work

NT Children as artists
Children as writers
Creative writing
Writing

Comprehensive school

SN Catering for all grades of academic ability

UF Multi-lateral school

BT Secondary education

RT Community School
Grammar School
Modern School
Technical School

Compulsory Work

SN May be applied to any other term as required

BT Students' work

RT Voluntary work

Computer

SN As piece of office equipment; distinguish from Computer Engineering

BT Office Equipment

RT Calculator
Duplicating Machine

Epistemology

SN In relation to philosophy of education; distinguish from Philosophy as a subject of the curriculum

UF Theory of Knowledge

BT Philosophy of Education

RT Concept Analysis
Mind
Moral Philosophy
Political Philosophy

Equipment

NT Furniture
Office Equipment

RT Buildings & Services
Laboratory Apparatus & Equipment
Teaching Aids

Essay

BT Creative writing

RT Playwriting
Poetry writing
Thesis

Ethics

SN Study of, as part of curriculum

BT Philosophy

RT Aesthetics
Ethics, professional
Humanism
Moral Education
Religious Education

Ethics, Professional

USE Professional Ethics

EUDISED

SN European Dcoumentation and Information Service in Education, of the Council of Europe

BT Information Service

RT Council of Europe
International Bureau of Education

European Studies

BT Developed Countries & Areas

RT United States Studies
Country Studies by name of country

Evacuee

BT Socially handicapped

RT Refugee

Evening Institute

UF Night School

BT Adult & Further Education

RT College of Further Education
County College
Part-time course
Village College
Vocational College

Examinations

BT Management of Education

NT Marks and Marking
External
Internal
Oral
Practical
Thesis
Written

RT Certification
Courses
Measurement
Tests

Mental development

BT Developmental Psychology

NT Concept formation
Educability
Thought and Thinking

RT Intelligence
Personality

Mental health and hygiene

BT Psychology of Education

NT Psychiatry
Psychoanalysis
Psychometry
Psychopathology

RT Health & Hygiene
Maladjusted
Mental development
Mentally handicapped
Social psychology

Mental Health Education

BT Health education

RT Mentally handicapped
Mental health & hygiene

Mental illness

USE Psychopathology

Mentally handicapped

BT Handicapped

NT Backward
Ineducable
Late developer
Slow learner

RT Maladjusted
Physically handicapped
Socially handicapped

Merchant Navy

BT Adult

RT Armed Forces
Naval Engineering
Ship School

Metabolism

SN Educational aspects of the physical process

BT Illness, disease

NT Obesity

Methodology

USE Research Method

Micro-teaching

SN Replication of classroom situation on a small scale, with few pupils

BT Teaching Methods

RT Coaching
Team teaching

Middle class

UF Bourgeoisie

BT Social classes & groups

RT Upper class
Working class

Middle School

SN Age range varies between authorities; may range from 9-13 to 11-14 years

BT Secondary Schools

RT Lower School
Upper School

Raising of school leaving age

USE Leaving School

Rates

USE Taxation, local

Rating

SN Assigning a mark or measure of achievement

USE Assessment

Reader

BT Faculty

RT Professor
Teacher

Reading

UF Alphabet

BT Mother tongue

NT Initial Teaching
Alphabet

RT Basic subjects
Books
Listening
Spelling
Writing

Reading Tastes & Habits

UF Reading Habits

BT Students' work

RT Books & Reading
Interests
Library work
Reading

Realia

SN Samples of real objects used for exhibition and as teaching aids

BT Laboratory Apparatus & Equipment

RT Geology
Model
Resource Centre
Specimen

Reality practice

SN Part of a training course, but under actual operational conditions

BT Training Methods

RT In-service training

Reasoning

BT Intelligence

RT Learning
Mind
Tests
Thought & Thinking

Recidivism

SN Relapse into crime and delinquency

BT Criminology

RT After Care
Courts
Delinquency
Imprisonment
Probation

Recitation

USE Speech